

# MILNE POINT UNIT

APPLICATION FOR THE  
TENTH REVISION OF THE KUPARUK  
PARTICIPATING AREA AND  
DEFERRAL OF MILNE POINT UNIT CONTRACTION

DECISION AND FINDINGS OF THE COMMISSIONER  
ALASKA DEPARTMENT OF NATURAL RESOURCES

May 6, 1998

MILNE POINT UNIT  
TENTH REVISION OF THE KUPARUK  
PARTICIPATING AREA

I. INTRODUCTION AND BACKGROUND

BP Exploration (Alaska), Inc. (BP), as Milne Point Unit Operator, applied to expand the Milne Point Unit (MPU) Kuparuk Participating Area (KPA) and to defer contraction of MPU Tract 22 from the unit. The Tenth KPA revision proposes to add approximately 3,157 acres from ADLs 25509, 25514, and 388235 to the existing KPA. BP submitted geological, well, and production data that justifies the expansion of the KPA within this portion of the MPU. The data indicate that the Kuparuk River Formation is capable of producing or contributing to the production of hydrocarbons in paying quantities.

The State of Alaska Department of Natural Resources, Division of Oil and Gas ("Division") approves BP's application to revise the KPA. The KPA revision encompasses an area that is "reasonably known to be underlain by hydrocarbons and known or reasonably estimated ...to be capable of producing or contributing to production of hydrocarbons in paying quantities." 11 AAC 83.351(a). The Division also approves the Exhibit C to the MPU Agreement (Tract Allocation Schedule), dated April 14, 1998 (Attachment 2 to this Decision and Findings). The effective date of the Tenth KPA revision and the Exhibit C is June 1, 1997. Finally, the Division approves BP's request to defer contraction of Tract 22 from the MPU until December 31, 1999. BP's plans to further delineate and produce Tract 22 warrant the continuation of the tract in the MPU.

II. APPLICATION FOR THE TENTH REVISION OF THE KUPARUK PARTICIPATING AREA

BP applied to expand the existing KPA on November 24, 1997. BP submitted the application under 11 AAC 83.351 and Articles 11 and 12 of the MPU Agreement. BP applied to add portions of ADL 25509 (Tract 10), ADL 25514 (Tract 11), and ADL 388235 (Tract 22), totaling approximately 3157 acres, to the KPA. The proposed KPA expansion acreage encompasses the Kuparuk Reservoir within the Kuparuk River Formation. The portions of leases proposed for inclusion in the Tenth KPA Revision and the proposed tract allocation schedule for all the leases in the KPA (Exhibit C to the MPU Agreement) are listed in Attachment 1 and 2 respectively to this Decision and Findings.

Geologic evidence supports expansion of the KPA to develop the Kuparuk River Formation reservoirs within the MPU under a unified plan of development. All of the expansion acreage is capable of production, or contributing to production in paying quantities. BP conducted Tract Operations on Tracts 11 and 22 to evaluate the extent of the Kuparuk River Formation. BP

drilled eight Kuparuk development wells in Tract 11 (four producers and one injector) and Tract 22 (two producers and one injector). Production from the expansion area began in June 1997 with MPF-05. Production from the expansion area currently averages over 800 BOPD.

BP also applied to defer contraction of MPU Tract 22 from the MPU until December 31, 1999. Most other MPU leases will contract out of the unit on that date if they are not part of a participating area. MPU Tract 22 was included in the MPU on November 18, 1996 subject to the condition that the portions of Tract 22 that are not within an approved participating area by December 31, 1997 will automatically contract out of the MPU. None of Tract 22 is in a participating area, but portions of MPU Tract 22 are included in the Tenth KPA expansion request. There is insufficient evidence to justify including the rest of Tract 22 in the KPA. During the first quarter of 1998, MPL-40, a Kuparuk producer, was drilled in the southern portion of the tract. BP is currently drilling a horizontal Kuparuk injection well, MPL-28i, in the northwestern portion of the tract. Additional wells are planned later in 1998 after evaluation of an "infill" 3-D seismic survey. BP will be able to assess the productive potential of this area by the end of 1999.

BP requested that the Tenth Revision to the KPA be effective on either the first day of the month in which production commenced from the Tenth KPA expansion areas (June 1, 1997) or the first day of the month after the filing of the expansion application (December 1, 1997). BP also requested that the extension of the Tract 22 deferral date to December 31, 1999, be approved before the December 31, 1997, contraction date. By letters dated December 30, 1997 and March 25, 1998, the Division extended the contraction date of Tract 22 to May 15, 1998.

### III. DISCUSSION OF THE PARTICIPATING AREA DECISION CRITERIA

The commissioner may approve expansion of a participating area (PA) if it is determined that expansion is "necessary or advisable to protect the public interest." AS 38.05.180(p) and 11 AAC 83.303(c). Approval of BP's application must be based on the criteria in 11 AAC 83.303(a) and the factors enumerated in 11 AAC 83.303(b).

The commissioner will approve a proposed expansion of a PA or a proposed production or cost allocation formula if the commissioner finds that each requested approval is necessary or advisable to protect the public interest. AS 38.05.180(p). To find that any or all of the requested approvals are necessary or advisable to protect the public interest, the commissioner must find that the requested approvals will: (1) promote the conservation of all natural resources; (2) promote the prevention of economic and physical waste; and (3) provide for the protection of all parties of interest, including the state. 11 AAC 83.303(a). The commissioner must consider: (1) the environmental costs and benefits; (2) the geological and engineering characteristics of the potential hydrocarbon accumulation or reservoir(s) proposed for inclusion in the participating area; (3) prior exploration activities in the proposed participating area; (4) the applicant's plans for exploration or development of the proposed participating area; (5) the economic costs and benefits to the state; and (6) any other relevant factors (including mitigation measures) the

commissioner determines necessary or advisable to protect the public interest. 11 AAC 83.303(b).

A PA may include only land reasonably known to be underlain by hydrocarbons and known or reasonably estimated through use of geological, geophysical, or engineering data to be capable of producing or contributing to the production of hydrocarbons in paying quantities. 11 AAC 83.351(a). "Paying quantities" means:

quantities sufficient to yield a return in excess of operating costs, even if drilling and equipment costs may never be repaid and the undertaking as a whole may ultimately result in a loss; quantities are insufficient to yield a return in excess of operating costs unless those quantities, not considering the costs of transportation and marketing, will produce sufficient revenue to induce a prudent operator to produce those quantities.

11 AAC 83.395(4).

(A) Promote the Conservation of Natural Resources

The formation of oil and gas units and PAs within unit areas to develop hydrocarbon-bearing reservoirs generally conserves hydrocarbons. The expansion of the existing KPA to encompass the new acreage will provide for more efficient, integrated development of the entire Kuparuk Reservoir within the MPU. A comprehensive operating agreement and plan of development governing the expanded area will help avoid duplicative development efforts on and beneath the surface.

Furthermore, producing hydrocarbon liquids from the expansion area through the existing production and processing facilities will reduce the incremental environmental impact of the additional production. The oil and gas resources of the expansion area can be accessed by wells from existing drill pads and processed through existing facilities. Expanding the KPA will maximize oil and gas recovery, while minimizing negative impacts on other resources within the area.

(B) Prevention of Economic and Physical Waste

Generally, the formation and expansion of a PA facilitates the equitable division of costs and allocation of hydrocarbon shares, and provides for a diligent development plan which maximizes physical and economic benefit from a reservoir's production. Further, the formation and subsequent expansion of a PA incorporating facility sharing opportunities and adopting a unified reservoir management strategy may allow economically marginal hydrocarbon accumulations to be developed that otherwise might not be.

Expanding the KPA and providing for PA operations of the leases improves the likelihood of more complete development of a reservoir with variable productivity across adjoining leases.

Using the existing KPA infrastructure and facilities eliminates the need to construct stand-alone facilities to process the additional volume of recoverable hydrocarbons from the expansion area. The Division encourages the shared use of major processing facilities to minimize any additional surface impacts and costs. The Division allows commingled production through the existing MPU facilities and approved a well test-based production allocation methodology for current and future reservoirs sharing those facilities. The methodology is subject to periodic review and reconsideration to assure that the state's royalty and tax interests are protected.

Further, facility consolidation saves capital and promotes better reservoir management through pressure maintenance and enhanced recovery procedures. In combination, these factors allow the Kuparuk Reservoir to be developed and produced in the interest of all parties, including the State. Expanding the KPA to include the leases that contain productive Kuparuk Formation reservoirs allows areas to access existing drill pads and unit facilities and prevents economic and physical waste.

(C) Protection of All Parties

The proposed expansion of the KPA protects the economic interests of all working interest owners of the reservoirs in the PA, and the royalty owner. Combining interests and operating under the terms of the MPU Agreement and MPU Operating Agreement assures each individual working interest owner an equitable allocation of costs and revenues commensurate with the value of their lease(s).

Because hydrocarbon recovery will be maximized and additional production-based revenue will be derived from the additional KPA production, the state's economic interest is promoted. The royalty share from the MPU KPA is free and clear of all lease and unit expenses. Diligent exploration under a single approved unit plan without the complications of competing leasehold interests promotes the state's interest. The expansion of the KPA promotes efficient evaluation and development of the state's resources, yet minimizes impacts to the area's cultural, biological, and environmental resources. Operating under the MPU Agreement provides for accurate reporting and record keeping, royalty settlement, in kind taking, and emergency storage of oil. These all protect the state's interest.

Finally, deferral of contraction for Tract 22 to allow continued development within the MPU will protect the lessees of the tract and the state. The continuation of the present MPU boundaries will promote the orderly assessment and development of the tract's resources. The tract's further delineation and development will continue to be part of a unified reservoir plan of development. The tract will continue to share MPU infrastructure that should permit economically marginal hydrocarbon resources to be developed.

In reviewing the above criteria, the following factors were considered:

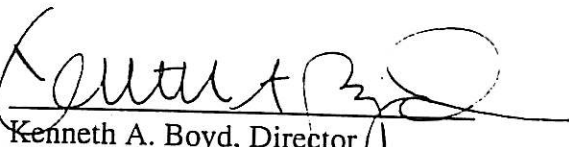
T.13.N.,R.10.E.,U.M., Sec. 7: SW/4 NW/4;  
(ADL 25509 (Tract 10));

T.13.N.,R.9.E.,U.M., Sec. 13: all; Sec. 14: W/2, SE/4, W/2NE/4, SE/4NE/4; Sec. 23: all;  
Sec. 24: W/2, W/2 NE/4, NE/4 NE/4, W/2SE/4  
(ADL 25514 (Tract 11));

T.13.N.,R.9.E.,U.M., Sec. 1: N/2, SE/4, E/2SW/4, NW/4SW/4; Sec. 2: E/2NE/4,  
NW/4NE/4, NE/4 NW/4; Sec. 12: NE/4NE/4  
(ADL 388235 (Tract 22)).

3. The KPA expansion provides for the equitable division of costs and an equitable allocation of produced hydrocarbons, and set forth a development plan designed to maximize physical and economic recovery from the reservoirs within the expanded and approved participating areas. The allocations of production and costs for the tracts within the KPA (Exhibit C), Attachment 2 to this Decision and Findings, are approved.
4. The MPU Agreement and the Alaska statutes and regulations governing oil and gas units provide for further expansions and contractions of the KPA in the future as warranted by additional information and findings. Therefore, the public interest and the correlative rights of all parties, including the state, are protected.
5. The production of KPA hydrocarbon liquids through the existing production and processing facilities within the MPU reduces the environmental impact of the additional production. Utilization of existing facilities will avoid unnecessary duplication of development efforts on and beneath the surface.
6. The MPU Owners plan diligent exploration and delineation of the reservoirs underlying the MPU under approved plans of development and operation.
7. The Division approved deferral of the contraction of Tract 22 from the MPU until December 31, 1999 .
8. Approval of the expansion of the KPA, and the revised Exhibit C to the MPU Agreement (Attachment 2 to this Decision and Findings) are effective retroactive to June 1, 1997.

For these reasons and subject to the conditions and limitations noted, I hereby approve the Tenth Revision of the Kuparuk Participating Area within the Milne Point Unit.

  
Kenneth A. Boyd, Director  
Division of Oil and Gas

6 MAY 1998  
Date



(3) The Applicant's Plan for Exploration or Development of the Expanded Participating Area

Plans for the development of the expansion area and areas adjacent to the expansion area include the continued use of F-Pad and L-Pad. So far in 1998, one Kuparuk producer, MPL-40, was drilled in the southern portion of Tract 22. A Kuparuk injection well, MPL-28i, is being drilled into the northwest portion of the tract. Additional development wells are scheduled to be drilled into these areas in 1998 after the "infill" 3-D seismic data on Tract 22 is interpreted.

(4) The Economic Costs and Benefits to the State

BP submitted with the application an allocation of production and cost for the leases in the proposed KPA expansion area (Attachment 2 of the Application and Exhibit C to the MPU Agreement) under 11 AAC 83.371. The proposed tract allocation schedule distributes working interest equity among the leases according to original recoverable reserves. The basis of the tract allocation schedule, recoverable reserves, is consistent with previous revisions of the KPA. Division staff agrees with BP's estimate of recoverable reserves from the expansion area tracts, and the Division finds BP's tract allocation methodology acceptable for allocating production and costs among the leases in the expanded KPA.

BP requested that Tract 22 remain in the MPU until December 31, 1999. BP plans to drill additional wells into Tract 22 in 1998. The information necessary to determine if the non-KPA portions of Tract 22 are appropriate for inclusion into the KPA will not be available until late in 1998, therefore deferring the contraction of Tract 22 from the MPU until December 31, 1999 is appropriate. There are no economic costs to the state to delay the contraction of Tract 22 from the MPU. The continuation of the tract in the MPU may result in earlier development.

#### IV. FINDINGS AND DECISION

Based on the facts discussed in this document and the administrative record, I make findings and impose conditions as follows:

1. The well(s) in the Kuparuk River Formation reservoirs within the area proposed for the Tenth KPA Revision are certified as meeting the paying quantities test. The acreage is underlain by hydrocarbons and known and reasonably estimated to be capable of production or contributing to production in sufficient quantities to justify the expansion of the KPA within the MPU.
2. The geological and engineering data justify the inclusion of the proposed tracts within the KPA. Under the terms of the applicable regulations governing formation and operation of oil and gas units (11 AAC 83.301 - 11 AAC 83.395) and the terms and conditions under which these lands were leased from the state, the following lands are to be included in the KPA (also see Attachment 1):

## 1) The Environmental Costs and Benefits

As discussed above in section III (A), the sharing of the existing facilities eliminates duplication and minimizes the surface area affected by additional development. All of the wells in the Tenth KPA expansion area will be developed from existing drill pads and MPU infrastructure. No significant additional impacts to nearshore and onshore habitat or biological resources are anticipated because of the additional Kuparuk production from the expanded KPA.

## (2) The Geological and Engineering Characteristics, and Previous Exploration of the Proposed Expansion Area

The MPU lies adjacent to the northeast side of the Kuparuk River Unit. The MPU produces oil from three geological formations: 1) the Upper Triassic Sag River Formation; 2) the Lower Cretaceous Kuparuk River Formation; and 3) the Upper Cretaceous Schrader Bluff Formation. The Tenth KPA expansion involves reservoirs contained within the Kuparuk River Formation. Within the MPU, the Kuparuk River Formation is cut by two major bisecting fault systems; one strikes northwest-to-southeast; the other strikes north-northeast to south-southwest. Fault throw is variable; major faults have throws in the range of 150 to 350 feet. There are numerous smaller faults in the area with throws on the order of 10 to 100 feet. The major fault blocks contain separate oil/water contacts. The Kuparuk River Formation is subdivided into four major informal members that are designated with letters A through D. The 'A' member is the oldest and the 'D' member is the youngest. Each member is further subdivided into submembers that are designated with numbers, such as C-1 and B-7 (with one being the oldest sub unit).

The 'C' and 'B' members are separated by a major unconformity, the Lower Cretaceous unconformity (LCU). The primary reservoir pay in the Tenth KPA expansion area comes from the 'A' sandstone submembers. Although it is not a primary objective, there is some upside potential in a few of the wells in the area for Kuparuk 'C' production.

The Tenth KPA expansion area includes ADL 388235, ADL 25514, and one forty-acre tract in ADL 25509. There are twelve well penetrations within the proposed KPA expansion area. In support of its application and upon request by the division, BP submitted the following data: 1) 20 annotated tvdss well logs; 2) a top Kuparuk A structure map with an outline of the Tenth expansion areas; and 3) individual tract recoverable reserve estimates and tract allocations. The size of the proposed KPA expansion is consistent with the Top 'A' Sand Structure Map and the oil/water contacts observed in the wells within and surrounding the expansion acreage.

The information provided to the division demonstrate that the proposed Tenth KPA expansion area is known to be underlain by hydrocarbons and is reasonably estimated to be capable of contributing to hydrocarbon production in paying quantities from the Kuparuk A sandstones. A few wells also contain pay within the 'C' sandstone interval.



For: John Shively, Commissioner  
Alaska Department of Natural Resources

Attachments: Attachment 1: Tenth Revision KPA Tracts and MPU Tract 22 Deferral Acreage  
Attachment 2: Exhibit C to MPU Agreement (Tract Allocation Schedule)

MPU.10thKPA.Rev.doc

**MILNE POINT UNIT  
10TH KUPARUK PA REVISION**

**KPA Expansion Land and Lease Description**

Tract #	ADL Lease #	Uniat Meridian	Sections	Acres	Total Acres
10	25509	T13N-R10E	Sec. 7: SW/4 NW/4	37	37
11	25514	T13N-R9E	Sec. 13: All Sec. 14: W/2, SE/4, W/2 NE/4, SE/4 NE/4 Sec. 23: All Sec. 24: W/2, W/2 NE/4, NE/4 NE/4, W/2 SE/4	640 600 640 520	2,400
22	388235	T13N-R9E	Sec. 1: N/2, SE/4, E/2 SW/4, NW/4 SW/4 Sec. 2: E/2 NE/4, NW/4 NE/4, NE/4 NW/4 Sec. 12: NE/4 NE/4	600 160 80 40	<del>720</del> 800
Total Additions					<del>3,157</del> 3,257

**Deferral of Milne Point Unit Contraction  
MPU Tract 22, ADL 388235**

Tract 22 Lands not included in KPA Expansion: ~~MPU Tract 22, ADL 388235~~

T13N-R9E, UM    Sec. 1: SW/4 SW/4  
                           Sec. 2: S/2, W/2 NW/4, SE/4 NW/4, SW/4 NE/4, SE/4  
                           Sec. 11: All NE/4  
                           Sec. 12: W/2, W/2 NE/4, SE/4 NE/4, SE/4

110 acres

W.D.

MILNE POINT UNIT AGREEMENT  
KUPARUK PARTICIPATING AREA

PROPOSED EXHIBIT C  
TRACT PARTICIPATION FACTORS

MPU Tract #	ADL Lease #	Umiat Meridian	Acres	Sections	Tract Participation %	BPAE/BPOE Royalty %	OXY Royalty %	Net Profit Share %
2	47433	T13N-R10E	2,240	Sec. 1: S/2; Secs. 2, 11, 12	1.98182%	20.0	12.5	
3	47434	T13N-R10E	2,560	Secs. 3, 4, 9, 10	8.86340%	20.0	12.5	
4	25516	T13N-R10E	640	Sec. 15	0.57071%	12.5	12.5	
4A	315848	T13N-R10E	1,280	Secs. 16, 21	2.24040%	12.5	12.5	
5	47437	T13N-R10E	2,480	Secs. 13, 14, 24 Sec. 23: N/2, SE/4, E/2 SW/4	6.31566%	20.0	12.5	
6	47438	T13N-R11E	1,424	Sec. 19 Sec. 18: W/2 W/2, NE/4 NW/4, NW/4 NE/4, E/2 SW/4, S/2 SE/4 Sec. 20: SW/4, W/2 NW/4, SE/4 NW/4, W/2 SE/4, SE/4 SE/4	1.76608%	20.0	12.5	
8	28231	T13N-R11E	2,277	Secs. 29, 30 Sec. 31: NE/4, N/2 SE/4, NW/4 Sec. 32: E/2, NW/4, E/2 SW/4, NW/4 SW/4	3.44109%	12.5	12.5	
9	25518	T13N-R10E	800	Sec. 25 Sec. 26: E/2 NE/4 Sec. 36: E/2 NE/4	0.43430%	12.5	12.5	
10	25509	T13N-R10E	2,299	Secs. 5, 6, 8 Sec. 7: NE/4, E/2 SE/4, NW/4	5.08324%	12.5	12.5	
11	25514	T13-R9E	2,400	Sec. 13, 23 Sec. 14: W/2, SE/4, W/2 NE/4, SE/4 NE/4 Sec. 24: W/2, W/2 NE/4, NE/4 NE/4, W/2 SE/4	14.25385%	12.5		
12	25515	T13N-R10E	1,320	Secs. 17, 20 Sec. 18: NE/4 NE/4	1.79048%	12.5	12.5	
14	25906	T13N-R10E	600	Sec. 27: W/2 NW/4, NW/4 SW/4 Sec. 28: N/2, N/2 SW/4, N/2 SE/4	2.05760%	12.5	12.5	
15	355017	T14N-R10E	3,400	Secs. 29, 32, 33, 34 Sec. 27: S/2 SW/4 Sec. 28: SW/4, W/2 NW/4, SE/4 NW/4, W/2 SE/4, SE/4 SE/4 Sec. 35: SW/4, S/2 NW/4, W/2 SE/4, SE/4 SE/4	9.85951%	12.5	12.5	40

MILNE POINT UNIT AGREEMENT  
KUPARUK PARTICIPATING AREA

PROPOSED EXHIBIT C  
TRACT PARTICIPATION FACTORS

MPU Tract #	ADL Lease #	Uniat Meridian	Acres	Sections	Tract Participation %	BPAE/BPOE Royalty %	OXY Royalty %	Net Profit Share %
16	355018	T14N-R9E	4,403	Secs. 25, 26, 35, 36 Sec. 27: E/2, E/2 SW/4, SE/4 NW/4 Sec. 34: N/2 NE/4, SE/4 NE/4, NE/4 SE/4 Secs. 30, 31	24.54478%	12.5	12.5	30
18	355021	T14N-R10E	1,080	Sec. 22: SE/4 SE/4 Sec. 23: SE/4, S/2 SW/4, NE/4 SW/4, S/2 NE/4, NE/4 NE/4 Sec. 24	2.57928%	12.5	12.5	30
19	355016	T14N-R10E	640	Sec. 19: S/2 Sec. 20: S/2	3.94672%	12.5	12.5	40
22	388235	T13N-R93	<del>720</del> 800	Sec. 1: N/2, SE/4, E/2 SW/4, NW/4 SW/4 Sec. 2: E/2 NE/4, NW/4 NE/4, NE/4 NW/4 Sec. 12: NE/4 NE/4	6.13370%	12.5	12.5	30
23	380109	T12N-R10E	480	Sec. 1: E/2; Sec. 12: NE/4	0.27457%	12.5	12.5	
24	380110	T12N-R11E	122	Sec. 6: W/2 NW/4, W/2 SW/4 Sec. 7: NW/4 NW/4	0.03703%	12.5	12.5	
25	375133	T12N-R11E	1,120	Sec. 3: All Sec. 4: E/2 Sec. 10: N/2 NW/4, N/2 NE/4	1.35034%	12.5	12.5	
26	375132	T12N-R11E	1,000	Sec. 1: W/2 NW/4, W/2 SW/4 Sec. 2: All Sec. 11: N/2 NW/4, N/2 NE/4 Sec. 12: NW/4 NW/4	1.62174%	12.5	12.5	
27	28232	T13N-R11E	800	Sec. 27: None Sec. 28: S/2 S/4 Sec. 33: W/2, SE/4, S/2 NE/4, NE/4 NE/4 Sec. 34: W/2 NW/4, NW/4 SW/4	0.85370%	12.5	12.5	
<del>34,885</del> 34,165					100.00000%			